UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,351	01/11/2002	Masayuki Takase	501.41076X00	6299

			EXAMINER
24956	7590	11/15/2005	ADHAMI, MOHAMMAD SAJID

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ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	**Applicant(s)**
Office Action Summary	10/042,351	TAKASE ET AL.
	Examiner	**Art Unit**	
	Mohammad S. Adhami	2662	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 March 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

admitted prior art (APA) in view of Munter (US 5,126,999)

Re claims 1 and 5:

APA discloses in claim 1 "a plurality of input line processors; a plurality of

input buffers being connected to said input line processors; each of said input

buffers includes a plurality of queue buffers corresponding to said output line

processors; a plurality of output line processors; and a crossbar switch being

connected to said input buffers and said output line processors."

APA does not explicitly disclose "arbitration [being] performed by taking

both an interval of time for a packet to be transmitted to the crossbar switch from

said queue buffer and a queue length of said queue buffer as parameters, both

are calculated for each queue buffer of said queue buffers, to thereby select a

queue buffer among all queue buffers in the input buffers and give the selected

queue the grant for transmitting a packet to said crossbar switch."

Munter discloses "arbitration [being] performed by taking both an interval

of time for a packet to be transmitted to the crossbar switch from said queue

buffer and a queue length of said buffer as parameters" (Col.8 line 1-52 "a combination of age and fill of each FIFO is used to assign a priority number to it" where the age is the interval of time, the fill is the buffer length, and the priority number represents an arbitration taking both the "interval of time" and "queue length" into consideration), "both are calculated for each queue buffer of said queue buffers" (Col. 3 lines 57-60 "measuring the fill of each of said plurality of input packet buffers; and measuring the number of transmission cycles during which no data packets have left each of said plurality of input packet buffers" where the number of transmission cycles calculates the interval of time) Col. 8 lines 16-18 "a 20-bit word....from the input buffer interface...which comprises an 8-bit fill value and 8-bit FIFO age value" where the input buffer interface calculates the values), "to thereby select a queue buffer among all queue buffers in the input buffers and give the selected queue the grant for transmitting a packet to said crossbar switch" (Col. 3 lines 33-34 "making use of all available information in resolving contention for output ports of the switching matrix" where the contention process selects a queue buffer and allows the transmission of a packet to the switch).

APA and Munter are analogous because they both pertain to packet transmissions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the APA to include in the system the above discussed features as taught by Munter in order to make "use of all available information in

resolving contention" to achieve "the best switching traffic occupancy" (Munter
Col.3 lines 33,34 and Col.3 line 32).

Re claims 2-4, and 6-8:

As discussed above, the APA and Munter have met all the limitations of
the parent claims.

APA does not explicitly disclose (Re claims 2 and 6) "output data interval
measuring means for measuring an interval of time for a packet to be transmitted
to the crossbar switch from said queue buffer, and queue length measuring
means for measuring a length of the queue buffer, both measuring each queue
buffer of all the queue buffers", (Re claims 3 and 7) "arbitration [being]
performed by taking as a parameter the queue length prior to the time interval so
as to prevent packets from overflowing from each of the queue buffers", and 9Re
claims 4 and 8) "arbitration [being] performed by taking as a parameter the time
interval prior to the queue length, so as to shorten a time for a packet to exist in
each of the queue buffers."

(Re claims 2 and 6) Munter discloses "output data interval measuring
means for measuring an interval of time for a packet to be transmitted to the
crossbar switch from said queue buffer, and queue length measuring means for
measuring a length of the queue buffer, both measuring each queue buffer of all
the queue buffers" (Col. 3 lines 57-60 "measuring the fill of each of said plurality
of input packet buffers; and measuring the number of transmission cycles during
which no data packets have left each of said plurality of input packet buffers"

where the number of transmission cycles corresponds to the interval of time and the fill corresponds to the queue length), (Re claims 3 and 7) "arbitration [being] performed by taking as a parameter the queue length prior to the time interval so as to prevent packets from overflowing from each of the queue buffers" (Col. 4 lines 28-29 "buffer fill is used as a primary criteria for prioritizing input data packets"), (Re claims 4 and 8) "arbitration [being] performed by taking as a parameter the time interval prior to the queue length, so as to shorten a time for a packet to exist in each of the queue buffers" (Col. 4 lines 29-32 "when a FIFO's age exceeds a predetermined threshold, a large number is added to the buffer fill value to increase the apparent priority of long-waiting buffers" where the threshold can be set low to represent a short time and adding a large number to the buffer fill based on a time interval is similar to taking time interval "prior" to the queue length).

APA and Munter are analogous because they both pertain to packet transmissions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify APA to include in the system the above discussed features as taught by Munter in order to make "use of all available information in resolving contention" to achieve "the best switching traffic occupancy" (Munter Col.3 lines 33,34 and Col.3 line 32).

Conclusion

3.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Zhang (US 6,879,561) shows a scheduling based on a QoS and

buffer occupancy. Jue (US 6,717,945) and Mansfield (US 6,914,881) show prioritizing

based on queue length. Howe (US App 2005/0058149) and Dally (US 6,891,834) show

prioritizing based on time interval. Lackman (US 5,904,296) shows switching priority of

transmission. Zaharychuk (US App 2002/0075803) and Butler (US shows arbitrating

between an interval of time and queue length. Dally also shows a tournament style

decisions making process. MacEachern (US 6,848,017) shows connecting a source

based on a metric. Isoyama (US 6,882,655) and Isoyama (US 6,570,873) show

granting permission for transmission.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Mohammad S. Adhami whose telephone number is

(571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

MSA 11/1/2005

JOHN PEZZLO
PRIMARY EXAMINER